

PARTICULATE SAMPLING PROBE AND DILUTION TUNNEL**ABSTRACT OF THE DISCLOSURE**

A particulate sampler is provided for use in analyzing particulate matter in exhaust gas. The sampler includes a transfer tube assembly including a probe at least partially defining a sample exhaust gas passageway. The transfer tube assembly has a first end portion with an opening for receiving exhaust gas and extends to a second end portion. A mixer receives the second end portion and includes a dilution gas passageway for carrying a dilution gas. The dilution gas passageway is in communication with the sample exhaust gas passageway for introducing the dilution gas to the exhaust gas. A tunnel is connected to the mixer and includes a gas mixing passageway extending a length for homogeneously mixing the gases together. The gas mixing passageway tapers toward the second end portion to ensure that the particulate matter mixes with the gases along the length of the gas mixing passageway without collecting in a recirculating flow area. The transfer tube includes an insulator cavity to insulate the sampler exhaust gas passageway and maintain the temperature of the exhaust gases within. Insulation may be arranged in the insulated cavity or exhaust gas may be conveyed through the insulator cavity to insulate the sample exhaust gas passageway.